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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/748,187	12/31/2003	Kiminori Watanabe	04329.2480-02	5539

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FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER
LLP
901 NEW YORK AVENUE, NW
WASHINGTON, DC 20001-4413

EXAMINER

LEWIS, MONICA

ART UNIT	PAPER NUMBER
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2822

DATE MAILED: 03/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/748,187

Applicant(s)

WATANABE ET AL.

Examiner

Monica Lewis

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 December 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 6 and 19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 6 and 19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☒ Certified copies of the priority documents have been received in Application No. 09/746,223.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>12/03</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This office action is in response to the preliminary amendment filed December 31, 2003.

Specification

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.
3. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Prior Art in view of Miyagawa (Japanese Publication No. 01-199467).

In regards to claim 6, Applicant's Prior Art discloses the following:

- a) a first-conductivity-type semiconductor layer (101) (For Example: See Figure 13B);
- b) a second-conductivity-type source region (103) formed in the semiconductor layer (For Example: See Figure 13B);
- c) a second-conductivity-type drain region (102) formed in or outside the semiconductor layer, separated from the source region (For Example: See Figure 13B);
- d) a gate electrode (105) formed above the semiconductor layer between the drain region and the source region, insulated from the semiconductor layer (For Example: See Figure 13B);

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e) a second-conductivity-type drain contact region (106) formed in the drain region and having a higher impurity concentration than the drain region (For Example: See Figure 13B);

f) a drain wiring (112) electrically connected to the drain region via the drain contact region (For Example: See Figure 13B);

g) a first-conductivity-type substrate contact region (107) formed adjacent to the source region (For Example: See Figure 13B); and

h) a source wiring (113) electrically connected to the source region, and also connected to the semiconductor layer via the substrate contact region (For Example: See Figure 13B).

In regards to claim 6, Applicant's Prior Art fails to disclose the following:

a) a distance from a contact surface of the drain wiring and the drain contact region to an edge of the source region side of the drain contact region being 5 μm or more.

However, Migyagawa discloses the use a distance (L1), which is the distance from the edge of the drain region (12) facing the source region (11) and the contact hole (14), that is not less than 3 μm (For Example: See Abstract) (Note: Migyagawa discloses 3 μm or more which renders obvious Applicant's claimed language of 5 μm or more. It appears that 3 μm or more clearly encompasses 5 μm or more. In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. See MPEP 2144.05). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Applicant's Prior Art to include the use of a distance that is greater than 5 μm as disclosed in Migyagawa because it aids in improving breakdown strength (For Example: See Abstract).

Additionally, since Applicant's Prior Art and Migyagawa are both from the same field of endeavor (semiconductors), the purpose disclosed by Migyagawa would have been recognized in the pertinent art of Applicant's Prior Art.

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6. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Prior Art in view of Miyagawa (Japanese Publication No. 01-199467) and Fujihira (U.S. Patent No. 5,736,774).

In regards to claim 19, Applicant's Prior Art fails to disclose the following:

a) a diode formed by short-circuiting the source wiring and the gate electrode.

However, Fujihira discloses the use of a diode formed by short-circuiting the source wiring and the gate electrode (For Example: See Column 12 Lines 19-21). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Applicant's Prior Art to include the use of a diode formed by short-circuiting the source wiring and the gate electrode as disclosed in Fujihira because it aids in reducing the voltage (For Example: See Column 12 Lines 19-21).

Additionally, since Applicant's Prior Art and Fujihira are both from the same field of endeavor (semiconductors), the purpose disclosed by Fujihira would have been recognized in the pertinent art of Applicant's Prior Art.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monica Lewis whose telephone number is 571-272-1838.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on 571-272-1852. The fax phone number for the organization where this application or proceeding is assigned is 703-308-7722 for regular and after final

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communications. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956

ML

March 18, 2005



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